

What is claimed is:

1. An electronic device comprising:
a first circuit comprising a radiation-emitting circuit element; and
a second circuit comprising a radiation-sensing circuit element,
5 wherein the radiation-sensing element is not part of the first circuit.
2. The electronic device of claim 1, wherein the first circuit is coupled to a first power supply line and a data line.
3. The electronic device of claim 2, wherein the first circuit is further coupled to a select line and a second power supply line.
- 10 4. The electronic device of claim 1, wherein the second circuit is coupled to a reference potential line and a sense amplifier.
5. The electronic device of claim 4, wherein the radiation-sensing circuit element comprises a photodiode.
6. The electronic device of claim 4, wherein the radiation-sensing
15 circuit comprises a phototransistor.
7. The electronic device of claim 1, wherein the radiation-sensing element is not electrically connected to the first circuit.
8. An electronic device comprises:
a first radiation-emitting element lying within a pixel; and
20 a first radiation-sensing element for sensing radiation emitted from the first radiation-emitting element, wherein the first radiation-sensing element lies outside the pixel.
9. The electronic device of claim 8, wherein the first radiation-sensing element lies at a location selected from:
25 between the first radiation-emitting element and the user side of the electronic device; and
farther from the user side of the electronic device compared to the first radiation-emitting element.
10. The electronic device of claim 8, further comprising a
30 waveguide, wherein the waveguide optically couples the first radiation-emitting element to the first radiation-sensing element.
11. The electronic device of claim 10, wherein the waveguide lies at a location selected from:
between the first radiation-emitting element and the user side of the
35 electronic device; and
farther from the user side of the electronic device compared to the first radiation-emitting element.
12. The electronic device of claim 10, wherein:

the electronic device includes a plurality of radiation-emitting elements, including the first radiation-emitting element, within an array;
the array has an array edge;
the waveguide has a waveguide edge adjacent to the array edge;

5 and

the first radiation-sensing element is connected to the waveguide edge.

13. The electronic device of claim 10, wherein:

the electronic device includes a plurality of radiation-emitting
10 elements, including the first radiation-emitting element, within an array;
the array has array edges;
the waveguide has waveguide edges adjacent to the array edges;
and

a plurality of radiation-sensing elements, including the first
15 radiation-sensing element, is connected to the waveguide edges.

14. The electronic device of claim 8, wherein the first radiation-emitting element is not electrically connected to the first radiation-sensing element.

15. The electronic device of claim 8, wherein the first radiation-emitting element is not electrically coupled to the first radiation-sensing element.

16. An electronic device comprises:

a first radiation-emitting element;
a waveguide; and

25 a first radiation-sensing element, wherein the waveguide optically couples the first radiation-emitting element to the first radiation-sensing element.

17. The electronic device of claim 16, wherein the waveguide lies at a location selected from:

30 between the first radiation-sensing element and the user side of the electronic device; and

farther from the user side of the electronic device compared to the first radiation-sensing element.

18. The electronic device of claim 16, wherein:

35 the electronic device includes a plurality of radiation-emitting elements, including the first radiation-emitting element, within an array;
the array has an array edge;
the waveguide has a waveguide edge adjacent to the array edge;

and

the first radiation-sensing element is connected to the waveguide edge.

19. The electronic device of claim 16, wherein:
the electronic device includes a plurality of radiation-emitting
5 elements, including the first radiation-emitting element, within an array;
the array has array edges;
the waveguide has waveguide edges adjacent to the array edges;
and
a plurality of radiation-sensing elements, including the first
10 radiation-sensing element, is connected to the waveguide edges.
20. The electronic device of claim 16, wherein the first radiation-emitting element comprises a transparent anode and a transparent cathode.
21. A method of using an electronic device comprising:
15 placing a radiation-sensing apparatus adjacent to a user side of the electronic device;
activating radiation-emitting elements within an array;
measuring intensities of radiation emitted from the radiation-emitting elements, wherein measuring is performed using the radiation-sensing apparatus; and
20 removing the radiation-sensing apparatus away from the user side of the electronic device after measuring.
22. The method of claim 21, further comprising changing values of signals provided to the radiation-emitting elements so that intensities of
25 radiation emitted from nearby pixels can be within a range of approximately four percent of one another.
23. The method of claim 22, further comprising storing correction factors corresponding to the changed values.
24. The method of claim 22, further comprising displaying
30 information on the electronic device using the correction factors, wherein displaying information is performed after removing the radiation-sensing apparatus.
25. The method of claim 21, further comprising displaying information on the electronic device using the correction factors, wherein
35 displaying information is performed after removing the radiation-sensing apparatus.
26. A method of using an electronic device comprising:
placing a reflector adjacent to a user side of the electronic device;
activating radiation-emitting elements within an array;

- measuring intensities of radiation emitted from the radiation-emitting elements, wherein measuring is performed while the reflector is located adjacent to the user side of the electronic device; and
removing the reflector away from the user side of the electronic device after measuring.
27. The method of claim 26, further comprising changing values of signals provided to the radiation-emitting elements so that intensities of radiation emitted from nearby pixels can be within a range of approximately four percent of one another.
28. The method of claim 27, further comprising displaying information on the electronic device using the correction factors, wherein displaying information is performed after removing the reflector.
29. The method of claim 26, further comprising displaying information on the electronic device using the correction factors, wherein displaying information is performed after removing the reflector.
30. A method of using an electronic device comprising:
activating radiation-emitting elements within an array;
measuring intensities of radiation emitted from the radiation-emitting elements during a most recent state;
determining correction factors for the radiation-emitting elements, wherein the correction factor for a specific radiation-emitting element is a function of:
a change in intensity between a prior state and the most recent state of the specific radiation-emitting element;
a maximum change in intensity between the prior state and the most recent state of any radiation-emitting element in the array;
a maximum intensity of any radiation-emitting element in the array during the prior state; and
a minimum intensity of any radiation-emitting element in the array during the most recent state.
31. A method of claim 30, wherein:
the radiation-emitting elements are location within an array oriented in rows and columns; and
each of the correction factors has a value within ten percent of $C_{x,y}$ calculated by the following equation:

$$C_{x,y} = \frac{\Delta L_{x,y}}{\Delta L_{x,y \max}} \times K(L_{x,y \max} - L'_{x,y \min}), \text{ wherein:}$$

$C_{x,y}$ is the correction factor for the specific radiation-emitting element;

$\Delta L_{x,y}$ is the change in intensity between the prior state and the most recent state of the specific radiation emitting element;

5 $\Delta L_{x,y \max}$ is the maximum change in intensity between the prior state and the most recent state of the any radiation-emitting element in the array;

K is a proportionality constant relating current to intensity for the radiation-emitting elements;

10 $L_{x,y \max}$ is the maximum intensity of the any radiation-emitting element in the array during the prior state; and

$L'_{x,y \min}$ is the minimum intensity of the any radiation-emitting element in the array during the most recent state.

32. The method of claim 31, further comprising providing a
15 corrected signal to the specific radiation-emitting element, wherein a value of the corrected signal is a sum of values for a baseline signal and $C_{x,y}$.

33. The method of claim 30, further comprising providing a
corrected signal to the specific radiation-emitting element, wherein a value
of the corrected signal is a function of values for a baseline signal and the
20 correction factor for the specific radiation-emitting element.

34. A method of using an electronic device comprising:
activating radiation-emitting elements within an array;
measuring a calibration signal for the radiation-emitting elements
during a most recent state;
25 determining correction factors for the radiation-emitting elements,
wherein the correction factor for a specific radiation-emitting element is a
function of the calibration signal; and
determining data signals for the radiation-emitting elements,
wherein for each radiation-emitting element, the data signal is a function of
30 an input signal and the correction factor.

35. The method of claim 34, wherein for a radiation-emitting
element:
the calibration signal comprises a drive signal that drives the pixel
during the most recent state; and
35 the data signal is directly proportional to the drive signal.

36. The method of claim 34, wherein for a radiation-emitting
element:

the calibration signal comprises an output signal from a radiation-
sensing element used during the most recent state; and

the data signal is inversely proportional to the output signal.